CLAIMS

What is claimed is:

1. An isolated nucleic acid fragment encoding all or a substantial portion of a cyclopropane synthetase comprising a member selected from the group consisting of:

(a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:2;

(b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:2; and

(c) an isolated nucleic acid fragment that is complementary to (a) or (b).

2. The isolated nucleic acid fragment of Claim 1 wherein the nucleic acid fragment encodes an amino acid sequence that is greater than 80% similar to the amino acid sequence set forth in SEQ ID NO:2.

3. The isolated nucleic acid fragment of Claim 1 wherein the nucleic acid fragment is complementary to a nucleic acid fragment that encodes an amino acid sequence that is greater than 80% similar to the amino acid sequences set forth in SEQ ID NO:2.

4. The isolated nucleic acid fragment of Claim 1 wherein the nucleic acid fragment hybridizes under stringent conditions to a nucleic acid fragment that encodes the amino acid sequence set forth in SEQ ID NO:2.

5. The isolated nucleic acid fragment of Claim 4 wherein the nucleic acid fragment encodes a functional RNA.

6. The isolated nucleic acid fragment of Claim 1 wherein the nucleotide sequence of the fragment comprises all or a substantial portion of the sequence set forth in SEQ ID NO:1.

7. A chimeric gene comprising the nucleic acid fragment of Claim 1 operably linked to suitable regulatory sequences.

8. A transformed host cell comprising the chimeric gene of Claim 7.

9. A cyclopropane synthetase polypeptide comprising all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:2.

10. An isolated nucleic acid fragment encoding all or a substantial portion of a cyclopropane synthetase comprising a member selected from the group consisting of:

(a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:4;

(b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:4; and

(c) an isolated nucleic acid fragment that is complementary to (a) or (b).

11. The isolated nucleic acid fragment of Claim 10 wherein the nucleic acid fragment encodes an amino acid sequence that is greater than 80% similar to the amino acid sequence set forth in SEQ ID NO:4.

12. The isolated nucleic acid fragment of Claim 10 wherein the nucleic acid fragment is complementary to a nucleic acid fragment that encodes an amino acid sequence that is greater than 80% similar to the amino acid sequences set forth in SEQ ID NO:4.

13. The isolated nucleic acid fragment of Claim 10 wherein the nucleic acid fragment hybridizes under stringent conditions to a nucleic acid fragment that encodes the amino acid sequence set forth in SEQ ID NO:4.

14. The isolated nucleic acid fragment of Claim 13 wherein the nucleic acid fragment encodes a functional RNA.

15. The isolated nucleic acid fragment of Claim 10 wherein the nucleotide sequence of the fragment comprises all or a substantial portion of the sequence set forth in SEQ ID NO:3.

16. A chimeric gene comprising the nucleic acid fragment of Claim 10 operably linked to suitable regulatory sequences.

17. A transformed host cell comprising the chimeric gene of Claim 16.

18. A cyclopropane synthetase polypeptide comprising all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:4.

19. An isolated nucleic acid fragment encoding all or a substantial portion of a cyclopropane synthetase comprising a member selected from the group consisting of:

(a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:6;

(b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a

substantial portion of the amino acid sequence set forth in SEQ ID NO:6; and

(c) an isolated nucleic acid fragment that is complementary to (a) or (b).

20. The isolated nucleic acid fragment of Claim 1 wherein the nucleic acid fragment encodes an amino acid sequence that is greater than 80% similar to the amino acid sequence set forth in SEQ ID NO:6.

21. The isolated nucleic acid fragment of Claim 19 wherein the nucleic acid fragment is complementary to a nucleic acid fragment that encodes an amino acid sequence that is greater than 80% similar to the amino acid sequences set forth in SEQ ID NO:6.

22. The isolated nucleic acid fragment of Claim 19 wherein the nucleic acid fragment hybridizes under stringent conditions to a nucleic acid fragment that encodes the amino acid sequence set forth in SEQ ID NO:6.

23. The isolated nucleic acid fragment of Claim 22 wherein the nucleic acid fragment encodes a functional RNA.

24. The isolated nucleic acid fragment of Claim 19 wherein the nucleotide sequence of the fragment comprises all or a substantial portion of the sequence set forth in SEQ ID NO:5.

25. A chimeric gene comprising the nucleic acid fragment of Claim 19 operably linked to suitable regulatory sequences.

26. A transformed host cell comprising the chimeric gene of Claim 25.

27. A cyclopropane synthetase polypeptide comprising all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:6.

28. An isolated nucleic acid fragment encoding all or a substantial portion of a cyclopropane synthetase comprising a member selected from the group consisting of:

(a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:8;

(b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:8; and

(c) an isolated nucleic acid fragment that is complementary to (a) or (b).

29. The isolated nucleic acid fragment of Claim 28 wherein the nucleic acid fragment encodes an amino acid sequence that is greater than 80% similar to the amino acid sequence set forth in SEQ ID NO:8.

30. The isolated nucleic acid fragment of Claim 28 wherein the nucleic acid fragment is complementary to a nucleic acid fragment that encodes an amino acid sequence that is greater than 80% similar to the amino acid sequences set forth in SEQ ID NO:8.

31. The isolated nucleic acid fragment of Claim 28 wherein the nucleic acid fragment hybridizes under stringent conditions to a nucleic acid fragment that encodes the amino acid sequence set forth in SEQ ID NO:8.

32. The isolated nucleic acid fragment of Claim 31 wherein the nucleic acid fragment encodes a functional RNA.

33. The isolated nucleic acid fragment of Claim 31 wherein the nucleotide sequence of the fragment comprises all or a substantial portion of the sequence set forth in SEQ ID NO:7.

34. A chimeric gene comprising the nucleic acid fragment of Claim 28 operably linked to suitable regulatory sequences.

35. A transformed host cell comprising the chimeric gene of Claim 34.

36. A cyclopropane synthetase polypeptide comprising all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:8.

37. An isolated nucleic acid fragment encoding all or a substantial portion of a cyclopropane synthetase comprising a member selected from the group consisting of:

(a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:10;

(b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:10; and

(c) an isolated nucleic acid fragment that is complementary to (a) or (b).

38. The isolated nucleic acid fragment of Claim 37 wherein the nucleic acid fragment encodes an amino acid sequence that is greater than 80% similar to the amino acid sequence set forth in SEQ ID NO:10.

39. The isolated nucleic acid fragment of Claim 37 wherein the nucleic acid fragment is complementary to a nucleic acid fragment that encodes an amino

acid sequence that is greater than 80% similar to the amino acid sequences set forth in SEQ ID NO:10.

40. The isolated nucleic acid fragment of Claim 37 wherein the nucleic acid fragment hybridizes under stringent conditions to a nucleic acid fragment that encodes the amino acid sequence set forth in SEQ ID NO:10.

41. The isolated nucleic acid fragment of Claim 40 wherein the nucleic acid fragment encodes a functional RNA.

42. The isolated nucleic acid fragment of Claim 37 wherein the nucleotide sequence of the fragment comprises all or a substantial portion of the sequence set forth in SEQ ID NO:9.

43. A chimeric gene comprising the nucleic acid fragment of Claim 37 operably linked to suitable regulatory sequences.

44. A transformed host cell comprising the chimeric gene of Claim 43.

45. A cyclopropane synthetase polypeptide comprising all or a substantial portion of the amino acid sequence set forth in SEQ ID NO:10.

46. A method of altering the level of expression of a cyclopropane synthetase in a host cell comprising:

(a) transforming a host cell with the chimeric gene of any of Claims 3, 12, 21, 30 and 39; and

(b) growing the transformed host cell produced in step (a) under conditions that are suitable for expression of the chimeric gene

wherein expression of the chimeric gene results in production of altered levels of a cyclopropane synthetase in the transformed host cell.

47. A method of obtaining a nucleic acid fragment encoding all or a substantial portion of the amino acid sequence encoding a cyclopropane synthetase comprising:

(a) probing a cDNA or genomic library with the nucleic acid fragment of any of Claims 1, 10, 19, 28 and 37;

(b) identifying a DNA clone that hybridizes with the nucleic acid fragment of any of Claims 1, 10, 19, 28 and 37;

(c) isolating the DNA clone identified in step (b); and

(d) sequencing the cDNA or genomic fragment that comprises the clone isolated in step (c)

wherein the sequenced nucleic acid fragment encodes all or a substantial portion of the amino acid sequence encoding a cyclopropane synthetase.

48. A method of obtaining a nucleic acid fragment encoding a substantial portion of an amino acid sequence encoding a cyclopropane synthetase comprising:

(a) synthesizing an oligonucleotide primer corresponding to a portion of the sequence set forth in any of SEQ ID NOs:1, 3, 5, 7 and 9; and

(b) amplifying a cDNA insert present in a cloning vector using the oligonucleotide primer of step (a) and a primer representing sequences of the cloning vector

wherein the amplified nucleic acid fragment encodes a substantial portion of an amino acid sequence encoding a cyclopropane synthetase.

49. The product of the method of Claim 47.

50. The product of the method of Claim 48.